

Appl. No. 09/674,646
Amdt. dated July 24, 2008
Reply to Office action of March 24, 2008

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REMARKS/ARGUMENTS

Claims 1 and 3 - 5 are pending.

Claim 1 has been amended (a) for better syntax, (b) to replace "regions that lie outside the regions..." with regions which are clear of the regions..." to incorporate the language of original claim 2 of the verified translation, and (c) to make it clearer that the functional elements are formed from the shaft itself.

The rejection of claims 1 and 3 - 5 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement is respectfully traversed. The Examiner contends that the specification as originally filed do not disclose, as recitation in claim 1, that the regions that lie outside the regions in which the cams are seated are kneaded and/or upset in a first method step prior to the high internal pressure forming. Presumably the Examiner is referring to the German version of the application filed with the PCT and the verified translation thereof submitted January 5, 2000, receipt of which was acknowledged in the Notification of Acceptance of Application Under 35 U.S.C. 371 and 37 CFR 1.494 or 1.495. A copy of that translation as filed is included herewith. Original claim 2 of the translation states:

2. The method as set forth in claim 1, characterized in that in a first method step prior to such high internal pressure forming, certain region, preferably ends of the tube, which are clear of the region, in which the cams are seated, are so kneaded and/or upset that same are increased in thickness and/or are stretched and thus different functional elements are formed.

Patently, the foregoing regions "which are clear of the region, in which the cams are seated," can only mean regions that lie outside of the region in which the cams are seated. In any event, the original language, syntactically corrected, has been incorporated in claim 1.

The rejection of claims 1 and 3 - 5 under 35 U.S.C. § 103(a) as being unpatentable (a) over Suzuki U.S. Patent 4,660,269 ("Suzuki) in view of Jordan U.S. Patent 4,382,390 (Jordan) and (b) over Suzuki in view of Dawson et al. IPN WO

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88/00643 ("Dawson et al.") are both respectively traversed. It should be clear from claim 1 as amended that the functional elements are formed from the shaft itself. Sufficient basis for such an amendment can be found in paragraphs [0013], [0015], [0018], [0024], [0035] and original claim 2.

In contrast, Suzuki merely shows end caps 4 and 5 that are not formed from the shaft itself. Instead end caps 4 and 5 are fixed to the hollow shaft (col. 4, l. 60-62). While regions 7, 8 are deformed plastically, these regions do not form any functional element, in particular no drive or control functional elements. Regions 7, 8 are merely deformed in order to join the shaft end caps 4, 5 to the hollow shaft.

The cam shaft produced in accordance with method of the invention has significant advantages over the cited references. It is extremely light in weight owing to the hollow cams and very thin walled bearer rings and has a high degree of stiffness. Moreover, the bearer rings at the most only have to be machined to a minor extent. Their hardness meeting requirements is already provided, this meaning that later hardening, which is normally necessary, for example inductive hardening or remelting hardening in a vacuum process, can be dispensed with.

In addition, the round kneading or upsetting in combination with the IHU method - unlike the case with all other manufacturing methods - only involves very low manufacturing complexity and consequently low costs. The costs are especially reduced because the number of individual parts to be separately manufactured and then to be fitted is extremely low. Owing to manufacture in accordance with the invention sources of error are minimized, which so far occurred in the fitting together of parts so far practiced. A substantial advantage of the method is due to the fact that the kneading method renders possible the production of functional elements, which as regards their geometry, dimensional accuracy and surface quality require very little additional machining. Frequently only a grinding process is necessary to finish them. The foregoing advantages are described in paragraph [0025] and [0026] of the description.

While the present invention allows reduces manufacturing complexity and costs are quite low in particular because of the small number of separate parts, the

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opposite is true for Suzuki. The number of parts to be joined is higher according to Suzuki in view of the fact that the hollow shaft has to be joined to separate end caps, which can only increase sources of error compared to the present invention. Finally, Suzuki does not mention the possibility that the end caps are bearing elements, drive and/or control elements or screw threads.

Applicants believe the claims are in condition for allowance and respectfully solicit a Notice of Allowance.

The Commissioner is hereby authorized to charge payment of any fees required associated with this communication or credit any overpayment to Deposit Account No. 50-3881. If an extension of time is required, please consider this a petition therefore and charge any additional fees which may be required to Deposit Account No. 50-3881. A duplicate copy of this paper is enclosed.

Dated: July 24, 2008

Respectfully submitted,

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